



FORESTLAND STEWARDSHIP

WORKING TOGETHER FOR HEALTHY FORESTS

Forests have a role in climate solutions

Can forest landowners receive compensation for the benefits provided by their forests? That possibility is being explored as part of a suite of solutions to the threat of global climate change.

Among their many gifts, forests provide vital habitat for animals and plants, affect water quantity and quality, supply wood products, and lift our spirits with recreational opportunities and peaceful surroundings.

Now add another generally overlooked benefit: forests are critical storehouses of carbon. Trees have the ability to take carbon dioxide, a major greenhouse gas, out of the atmosphere and store it for long periods of time.

Forests play a key role in maintaining a stable climate. Worldwide, forest loss is a significant contributing factor to global climate change.

Here in California, the connection between forests and climate change is becoming widely recognized. That relationship is one of many avenues being developed to ameliorate the threat of climate change. This could provide opportunities and incentives for forest landowners who maintain and expand the forest carbon stocks (e.g., grow trees).

In this issue we'll look at the relationship between forests and global climate change, where the discussion is going, and how forest landowners can get involved.

The connection between forests and climate change is being explored as a potential way to ameliorate global climate change.

This could provide opportunities and incentives for forest landowners.

*Photo by The Pacific Forest Trust/
Jon Remuval*

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FORESTLAND STEWARD

Forestland Steward is a joint project of the CA Dept of Forestry and Fire Protection (CAL FIRE), UC Cooperative Extension, and USDA Forest Service to provide information on the stewardship of private forestlands in California.

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A short primer on forests and climate change

To understand how forests fit in to the whole issue of climate change we have to step back and look at the global picture. The details may be complicated but the basic story is easy to comprehend.

The big picture

Our earth is blanketed by a relatively thin atmosphere that contains a number of gases that are vital and necessary to our well-being. Many of these gases trap heat from the sun, creating a greenhouse effect that keeps the earth at a livable temperature.

Too much of these insulating gases, however, can trap excess heat, resulting in changes to the earth's temperature.

There is not much leeway. Even a very small change in average temperature can cause far-reaching disruptions in the life cycles of plants and animals.

Carbon, in the form of carbon dioxide (CO₂), is one of the major greenhouse gases and the main culprit in global climate change.

Follow the carbon

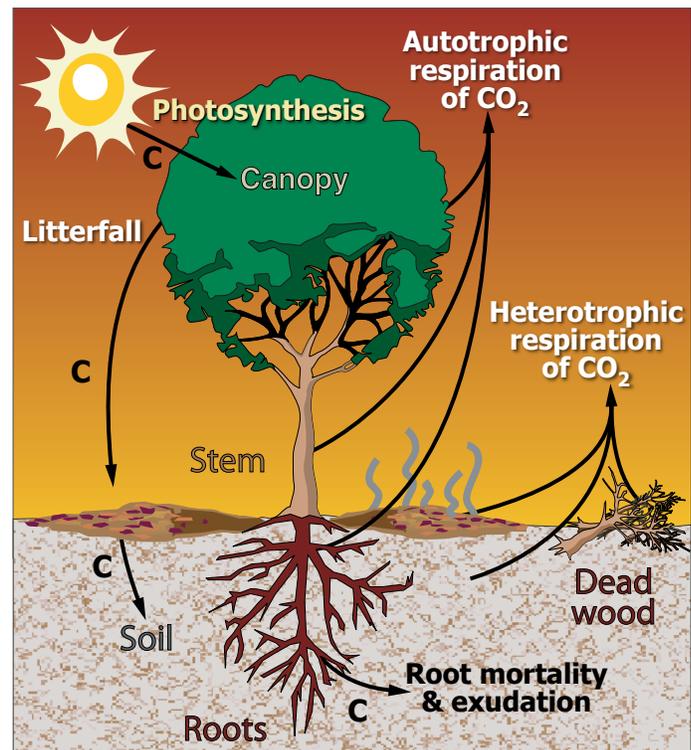
To understand the problem and its possible solutions we have to follow the carbon. Looking at the world through a carbon lens provides an entirely new perspective on forests.

Carbon moves through the land, atmosphere, and ocean in a complex cycle.

Trees and other plants withdraw carbon dioxide from the atmosphere through photosynthesis and turn it into biomass—trunks, leaves, roots, etc. Animals eat the plants and thereby incorporate carbon into their bodies.

When plants or animals die, or leaves fall, the process is reversed. The biomass decomposes, and the carbon turns into CO₂ and goes back into the atmosphere.

To make this just a bit more complicated, trees, along with all living things, also release CO₂ through respiration. In order to figure out how much carbon is actually stored in trees we have to look at the net balance between how much carbon is taken in and how much respired.



Carbon moves through the land, sea, and air through complex interactions known as the carbon cycle.

Graphic by N. Scott and Michael Ernst, Woods Hole Research Center.
http://www.whrc.org/new_england/forest_ecol.htm. Reprinted with permission.

Young vs. old

Young, fast-growing trees have a rapid rate of carbon sequestration (uptake and storage of carbon from the atmosphere). They take up more carbon than they lose through respiration, resulting in increased biomass. This rate slows as trees age. Mature forests may become carbon neutral, balanced between sequestration and respiration. However, mature forest ecosystems already contain a huge amount of carbon stored in biomass and soil.

Carbon from the past

There have been periods in the past when photosynthesis exceeded respiration and organic material built up forming coal, oil, and natural gas over millions of years—the “fossil fuels.” When these fuels are extracted and burned for energy this previously stored carbon is released. This is the carbon that is largely responsible for the current increase in greenhouse gases driving global climate change.

Where do forests fit in?

Forest carbon is found in five major areas (called pools): above-ground biomass, below-ground biomass, litter, dead wood, and organic carbon in the soil. The way we manage forests affects the dynamics of each pool.

Forests can take carbon out of the atmosphere, thereby countering some fossil fuel emissions. This can be done at a low cost and we have the tools necessary—the technology for growing and managing trees is well known.

There are two main parts to the greenhouse gas equation: 1) the release of gases (mostly carbon) into the atmosphere, and 2) the removal of those gases. Most attention to date has been directed toward the first part through efforts to reduce the amount of CO₂ released from fossil fuels. The focus on forests is an attempt to increase the second part of the equation: carbon removal and storage.

Forests play a dual role. They are a carbon sink (take up carbon) through photosynthesis but become an emission source (release carbon) when forests are lost and the land converted to other uses. Along with growing healthy forests it is vital to prevent forest loss. Worldwide, about 20% of today's human-caused global CO₂ emissions have been attributed to forest loss.

Fire

Fire is an important part of the carbon cycle. Fire consumes organic matter, releasing greenhouse gases including CO₂, methane, carbon monoxide, and other materials. Trees and plants not immediately consumed in the fire may be killed and decompose rapidly, releasing CO₂.

Although fire produces carbon emissions, it is also a natural and necessary part of the ecosystem, especially in California where plants are adapted to fire. Rather than eliminate fire, the goal is to maintain historical fire regimes and thus avoid catastrophic fires that occur when fuels build up to unnatural levels.

Biomass to energy

In a win-win for both the forest and the atmosphere, thinnings from overstocked forests can be burned to produce energy. Generating electricity in a biomass plant reduces our demand for fossil fuels while at the same time reducing wildfire hazard. The rising price of electricity is rapidly reaching the point where biomass is more financially feasible, and utilities are looking to biomass as an important part of their renewable

energy portfolio. Concern for national energy security is also driving research on cost-effective means to convert wood to ethanol.

Wood products

Wood products are another major carbon pool. A pound of wood contains about a half pound of carbon. Products made out of wood can retain their carbon stores for varying lengths of time, until they decompose or burn. Some products, such as homes, may last for a hundred years while other wood products retain their carbon for much shorter periods.

Expanding the use of wood products is a climate-friendly strategy since steel, plastic, aluminum, and concrete require much more energy to manufacture and produce much higher greenhouse gas emissions.

Should we care?

The earth as a whole is warming. But the term global warming isn't quite accurate. Not all areas will get warmer. Some will be colder, some will be wetter or drier, there may be more storms, or more intense weather events. While no one knows exactly what will occur where, climate change is now well-acknowledged as a threat to our economy, environment, and health.

In California, predicted effects include reduction in the Sierra snowpack, reduced water quantity and quality, sea level rise, coastal erosion, increases in infectious diseases and other health problems, and changes in natural ecosystems including forests.

How can we increase carbon sequestration in forests?

The management practices used to increase forest carbon sequestration are the same ones that promote good forest health. The goal is to encourage trees to grow and thrive, to get bigger faster, and to reduce the risk of wildfire.

There are three main strategies for forest mitigation of climate change:

1. Conserve existing forests in a healthy condition through proper management,
2. Increase carbon sequestration by planting trees or other forest management techniques that increase biomass,
3. Increase the use of wood products and substitute wood for materials that require energy-intensive production.

CAL FIRE has developed a five-point action plan to meet climate goals (*see sidebar to right*).

Forests present a unique opportunity to take some of the excess carbon out of the atmosphere, thereby countering some of the CO₂ being emitted.

CAL FIRE's Five-Point Action Plan to meet the Governor's Climate Action Team Goals:

1. Increase tree planting statewide to capture carbon dioxide.
2. Grow trees faster and smarter to store more carbon.
3. Actively and aggressively control wildfires to reduce carbon dioxide emissions from smoke.
4. Conserve forest landscapes to retain trees and optimize carbon storage.
5. Promote the use of wood from urban and native forests to diversify our energy supply.

The Global Warming Solutions Act of 2006 requires the state to reduce greenhouse gas emissions to 1990 levels by 2020 using a mix of mandatory, market-based, and voluntary approaches.

Seeking innovative solutions in California

California has taken the lead in looking for solutions to climate change. The *Global Warming Solutions Act of 2006* (AB32) requires the state to reduce greenhouse gas emissions to 1990 levels by 2020. The bill authorizes the California Air Resources Board (ARB) to set limits on emission sources using a mix of mandatory, market-based, and voluntary approaches. The ARB will make a series of decisions over the next few years on the rules to meet the goals.

The Governor's Climate Action Team identified a portion of the state's emission reduction goal to be met by the forest sector. While much of AB32 will focus on new forms of

energy, transportation, and technology, forests are also an important part of the mix.

California Climate Action Registry

In order to meet its goals California needs an infrastructure in place to track carbon and encourage solutions. The California Climate Action Registry (CCAR) was established to do just that. It has developed general protocols for inventorying, tracking, and reporting emissions, as well as specific protocols for forestry and other industry sectors.

Recently, the California Registry became multi-state, meaning that a greenhouse gas accounting system will be standardized across a broad region.

What does this mean to forest landowners?

The simple answer is: nobody really knows yet. The Forest Protocols are still a work in progress and many important decisions remain to be made by the ARB.

Already, a voluntary carbon market is emerging in which forest landowners are selling carbon credits created through changes in forest management. Buyers so far are entities that voluntarily want to offset their emissions.

Until State climate policies become more certain, markets will remain tentative. Future carbon revenue could help landowners in many ways: to reforest poorly-stocked lands, augment forest management, or help resist development and keep land in the family. A host of other ecosystem benefits can result from carbon-managed forests, such as restored habitats, healthier stands, wildfire resistance, and improved watersheds.

Next steps

The California Environmental Protection Agency (CalEPA) and the ARB are on an ambitious timeline to adopt climate policies.

The Market Advisory Committee has just recommended basic principles for an emissions market structure. This fall the ARB will hold workshops to review greenhouse gas accounting protocols, including the Forest Protocol. The Economic and Technology Advancement Advisory Committee will submit a report by January outlining key areas for finance and technological investments, including forest sectors. *To keep up on current events, see p. 10.*

Van Eck forest benefits from project



Photo by The Pacific Forest Trust/Jon Remueal

The first step in registering a forest with the CCAR is to do an inventory. Living tree biomass, standing dead tree biomass, and lying dead wood are required carbon pools. Shrubs and herbaceous understory, litter, soil, and wood products are optional carbon pools.

The first forest project to register in the California Climate Action Registry (CCAR) was the 2100-acre Van Eck property in Humboldt County managed by The Pacific Forest Trust. It commits to sequestering 500,000 tons of CO₂ above a "business as usual" forest management baseline over the next 100 years. At the same time it will produce 170 million board feet of wood products.

The carbon accounting at the Van Eck forest complies with the CCAR Forest Protocols and meets the key tests of additionality, permanence, and transparency.

Voluntary purchases of Van Eck credits have sold at about \$10 per ton of CO₂.

FAQs on forest carbon

California Forest Protocols and the role of forests

The California Forest Protocols establish the standards for incorporating forests into a climate strategy. These FAQs answer some of the most common questions about the protocols. With passage of AB 32 the topic is rapidly changing. Readers can keep current by watching the California Climate Change Portal: <http://climatechange.ca.gov>.

Where did the CA Forest Protocols come from?

The California Climate Action Registry (CCAR) was established by legislation in 2000 to encourage reductions in greenhouse gas emissions. The registry, a public-private non-profit corporation, allows entities to voluntarily record their greenhouse gas baseline and reductions, in anticipation that early action to reduce emissions will be recognized if and when future regulations come into place.

Currently, membership in CCAR includes all of the state's major electric utilities, most oil and gas companies, many cities, businesses and agencies, and several forest landowners.

All registrants in CCAR must comply with the General Reporting and Certification Protocol, which lays out standards for defining the entity and reporting annual emissions. Supplementing the general protocol are industry-specific protocols, including forestry.

What do the Forest Protocols cover?

Forest Protocols address four key components:

- **Establishing a Baseline.** The baseline uses "business as usual" forest carbon stocks, projected into the future assuming intensive, but legal, harvest regimes.
- **Demonstrating Additionality.** Carbon stocks resulting from activities *additional* to "business as usual" practices, using three types of CCAR authorized forest projects.

- **Preventing Leakage.** Preventing the shifting of harvest to another place that cancels out the additionality of the sequestration project.

- **Ensuring Permanence.** Making sure the net additional carbon stocks remain stored. This is important when carbon credits are sold to offset emissions that have already affected the atmosphere.



Photo by The Pacific Forest Trust/Jon Remucal

Are working forests allowed?

Yes, they are encouraged. New carbon revenue can help landowners keep forestland in forest use. Private forestlands face ever-increasing pressures to fragment and develop. Worldwide, deforestation accounts for 20–25 percent (estimates vary) of all human-made emissions of CO₂. In California, nearly 3 million acres of private forest and rangelands are conservatively expected to be lost to development over the next 40 years. To ensure the permanence of

carbon stocks, California requires that a working forest conservation easement be placed on lands used for emission reductions. The terms of the easement are negotiated between the landowner and a qualified land trust, and in general specify 1) reduced development so that forests do not become an emission through land use change, and 2) stewardship practices that keep the land in production. Landowners are assured they can continue to practice forestry, receive compensation for the easement and from carbon sales, and secure the land supporting the carbon stock.

How can forest landowners register with CCAR?

Forest landowners can become members of CCAR at two levels:

- Register as an Entity and track greenhouse gas emissions for the ownership. This is described in the Forest Sector Protocol. Required carbon

The California Climate Action Registry (CCAR) allows entities to voluntarily record their greenhouse gas baseline and reductions, in anticipation that these early actions to reduce emissions will receive recognition if and when future regulations come into place.

Ultimately there is an upper limit on the volume of carbon a healthy forest can sequester and store, but there is a long way before California reaches that point. Emerging carbon value may be enough to bring landowners back into forest management.

pools for reporting are living tree biomass, standing dead tree biomass, and lying dead wood. Optional pools are shrubs and herbaceous understory, litter, soil, and wood products.

- Optionally, landowners can also register a forest project designed to produce additionality, anticipating carbon credits they can sell to the market. Recognized project types are described in the Forest Project Protocol. Certification by a third party is required.

What is included in California's forest carbon accounting system?

The concept of *additionality* underlies all aspects of forest carbon accounting. Additionality represents carbon removed and stored from the atmosphere that exceeds what otherwise would have occurred, that is, the “business as usual” baseline. Additional stored carbon above the baseline is termed a “certified emission reduction.”

Is there a market for forest credits?

Voluntary offset markets are already trading forest carbon. Decisions whether California will establish an enforceable, formal market system are still being considered. AB 32 gives the Air Resources Board (ARB) new authority to implement California's strategy for climate solutions. The structures required for trading have matured through international experience, and forest credits are part of the mix.

What is California's "business as usual" forest baseline and how was it set?

The “business as usual” baseline is defined as forest management that complies with the California Forest Practice Rules. The Rules are highly prescriptive and set enforceable limits on clearcut size and time before adjacent blocks can be entered. Rapid restocking is required after harvest, and protections for water quality, road standards, and wildlife habitat are numerous.

During CCAR deliberations opposing arguments were made that the Rule baseline was too high or too low. Some argued that California regulations are higher than other states and therefore already lock in additionality. Others argued that landowners managing more conservatively than the Rules should start their baseline at their already high levels of stocking. The arguments raised competing issues: disadvantaging those who voluntarily maintain higher carbon pools, versus subjectivity in determining what the lower “business as

usual” standards were in other states. CCAR determined that the current Forest Practice Rules constitute an equitable and defensible basis for setting a repeatable baseline.

Additionality Projects

Three types of forest projects are currently authorized for creating emission reductions:

- **Conservation-based management projects.** These change forest management to produce larger carbon stocks. Additionality is counted as the difference between the baseline scenario and a management regime that increases carbon storage, computed over a 100 year period.
- **Reforestation projects.** Restoration of native tree cover on lands that were previously forested, but have been out of tree cover for a minimum of 10 years. Additionality is the difference in carbon stocks with and without the reforestation project.
- **Conservation projects.** These credit “avoided deforestation”, that is, the difference between carbon in the existing forest versus that remaining after development..

Forest projects designed to create additionality may be carried out on all, or a portion, of the entity's total forestland. Projects must use native species and natural forest management practices, defined as practices that “...promote and maintain native forests comprised of multiple ages and mixed native species in the overstory and understory.” Afforestation projects (planting trees on nonforest lands) are not authorized by the protocols.

Does California measure the size of the carbon pool or rate of sequestration?

The California Registry uses size of the carbon pool (“stock”) to measure forest carbon, and change in stock to measure additionality or emissions. This is consistent with international carbon accounting principles. Rate of sequestration is appropriate for various research purposes, but is not appropriate for establishing forest carbon additionality and credits.

Is growing bigger trees the only way to show additionality?

No, there are several ways to manage forests to produce climate benefits. One is to manage for bigger trees, larger riparian buffers, older habitats, more downed wood, more storage in forest soils, and more complex biota. Another option is rehabilitating degraded stands, especially stands that did not regenerate well following early logging or wildfire. Avoiding forest conversion is also eligible for credit.

Increasing use of wood products may also produce additionality as long as the accounting system is consistent and includes the same set of pools.

Is carbon management contrary to “fire safe” goals? What about wildfire risks?

Pursuing carbon additionality does not mean ignoring forest health. This is especially true when overstocked stands caused by decades of fire suppression increase the risk of wildfire and resulting emissions. Many private forest-landowners already manage their lands to reduce wildfire risk. Methods to measure activities that reduce wildfire risk are being examined as a climate strategy. In a carbon market, credits from many landowners may be bundled into a single offering, allowing a portion to be set aside as an unsold buffer, and spreading the risk of loss across owners and geographic areas.

Can biomass projects reduce carbon emissions?

Biomass projects can provide double climate benefit. They can reduce wildfire emissions through removal of unnatural fuel loads, and then offset fossil fuels by burning wood waste in power plants. The Governor’s 2006 CAT (Climate Action Team) report identifies a potential reduction of 6.8 million metric tons CO₂ from fuels management and biomass projects by 2020. Previously, forest biomass projects have been marginal due to high costs, sporadic subsidies and undependable supplies of fuel. Now rising energy prices and increased renewable energy requirements for utilities enhance the feasibility of biomass projects. Most lumber mills in California already use co-generation facilities to dispose wood waste and produce energy.

Emerging research in cellulosic ethanol and thermal gasification of biomass offer potential energy benefits, but are still in early stages of development. Because wood waste is heavy and transportation costs high, all projects need life-cycle carbon accounting to determine actual emission reductions. Carbon credits from the offset of fossil fuels may help financial viability. The value of tree removals for biomass energy is included in the Registry’s protocol for the Power/Utility sector, not the Forest Sector.

How do forest projects compare with activities designed to reduce fossil fuels emissions?

Strong action is required to address emissions, and forest projects are not intended to take attention away from fossil fuel reductions.

However, all tools are needed to address the magnitude of the climate challenge. Disqualifying forests ignores the emission side of the equation when forests are lost, not to mention the enormous environmental and economic co-benefits that forests provide.

Are wood products counted?

The *Forest Protocol* now allows optional reporting of wood products. The pool of carbon stored in harvested wood products varies in size through management, consumption, and decay. Studies show wood to be the lowest greenhouse gas emitter compared to steel, concrete, and other building materials in life cycle analyses. Californians are prodigious consumers of wood, importing 70% more than we produce, much of it from places with fewer environmental protections. A climate-friendly platform would support a “Grown in California” program to promote consumption of in-state wood.

What about the easement?

A permanent conservation easement, held by a qualified organization, is required for registering a forest project in CCAR. Forest carbon credits are sold to offset emissions that have already been made to the atmosphere, therefore the forest carbon stock needs to be as permanent as possible. The easement compensates the landowner for foregone development value, and in the event of fire or other disturbance the land will still be available to reestablish the forest.

Who handles the inventory requirements?

Any Registered Professional Forester should be able to calculate what is needed for the CCAR registry, including establishing the “business as usual” baseline, comparing additionality management scenarios, and tracking them over time. Improvements in carbon measurements should allow streamlining of inventory requirements.

Are there benefits to early registration?

Current protocols permit the baseline year to date back as early as 1990, provided the data is reported to the Registry and certified for each consecutive year. There is no assurance the 1990 baseline will be allowed after 2008 when CCAR authority transitions to ARB jurisdiction.

—abridged from FAQs of April, 2007 by Andrea Tuttle. Available by request from atuttle@nature.berkeley.edu. Special thanks to Dr. Tuttle, who generously reviewed and provided input on several articles in this issue.

Glossary

Additionality—carbon stocks resulting from activities *additional* to “business as usual” practices.

Afforestation—planting forests where none has been before.

Baseline—forest management that complies with the California Forest Practice Rules.

Business As Usual—forest stocks resulting from intensive but legal compliance with the California Forest Practice Rules.

Cap and Trade—regulatory program under which a cap is set on the volume of carbon emissions permitted, and rights to these emissions are distributed. These rights (called allowances, permits, or credits) can then be bought and sold.

Carbon Credits—rights to carbon emissions (*see cap and trade*).

Carbon Sequestration—uptake and storage of carbon.

Leakage—shifting the harvest to another place, which cancels out the additionality.

CAL FIRE's nursery does its part to help with reforestation and global warming

This program is also now being tasked with exploring ways to combat global warming, sequester more carbon, and assist in urban greening efforts.

Rich Eliot, CAL FIRE Nursery Director

It's a well-kept secret. California Department of Forestry and Fire Protection (aka CAL FIRE) still maintains its valuable Nursery Program to assist forestland stewards. The dedicated foresters and specialists operating this program grow seedlings and provide reforestation information to forest landowners.

In addition, these staff are the guardians of the state's genetic treasures. They collect tree seed from most of the climatic zones areas of our extremely varied state to safeguard the ability

landowners, industrial forest landowners, and other state and local agencies for timber production, reforestation, erosion control, wildlife habitat enhancement, and to ensure the replacement of our valuable forests after fires, insect attacks, or other natural disasters. Seedlings provided are specific to the individual seed zone, elevation, and species required.

This program is also now being tasked with exploring ways to combat global warming, sequester more carbon, and assist in urban greening efforts. This new direction may encourage small landowners to start utilizing the nursery's services and provide new incentives for forest landowners to reforest and maintain their investment.

Seed banking and seed storage occurs at the L.A. Moran Reforestation Center, located in the city of Davis, just west of Sacramento. Over 40,000 pounds of seed is stored in the seed bank. The Center processes 2,000 to 10,000 bushels of conifer cones and hardwood seed annually.

The seed bank also provides seed storage and testing services to private parties. While seed is not generally sold to the public, it is available for contracts grown at a CAL FIRE nursery and other projects done in cooperation with CAL FIRE.



Bare root seedling beds at Magalia Reforestation Center.

Photo by Rich Eliot

to reforest in the event of any natural or human-caused disaster.

The Nursery Program supports CAL FIRE's mission: to protect and enhance forest, range, and watershed values.

Work is done primarily at the L.A. Moran Reforestation Center, established in 1917, and the Magalia Reforestation Center, established in 1952. These two nurseries provide seedlings to small forest



George Randar lifting ponderosa pine.

Photo by Deputy Chief Steve Jones



Photo by Deputy Chief Steve Jones

Teri Griffith tests sugar pine cones at the L.A. Moran Reforestation Center.

The Magalia Reforestation Center, located in the Sierra Nevada foothills of Butte County, is presently the department's only operating nursery. It produces 1- and 2-year-old bare root seedlings for many seed zones and elevations throughout California, with a production capacity in excess of 2.5 million seedlings.

This nursery also produces 40,000 to 50,000 containerized seedlings per year, with plans to expand this type of growing to meet increasing demands. While most of the nursery stock is grown speculatively, contracts are available.

Contracts should be arranged by late fall in order to stratify seed for spring sowing. If you are interested in contracts or reforestation advice, call (530) 872-6301.

Special requests from the public for planting alternative species and/or lots are considered when the nursery staff creates their fall sowing plans for the following spring sowing season.

CAL FIRE is also a member of the North Sierra Tree Improvement Association, which includes several large industrial timberland owners and the USDA Forest Service. This association was formed to develop a source for genetically superior Ponderosa pine seed, which is now available for growing. As a result, the nursery is able to offer contract growing of these seedlings to the general public. Contact the Magalia Reforestation Center for more information about acquiring these superior seedlings.

A price list is available in the fall with orders accepted starting November 1. Seedlings are generally available from the second week in

December through the spring, with orders accepted and seedlings reserved on a first come first served basis.

The minimum order is 25 seedlings and shipping is available via United Parcel Service. Seedling prices for the 2006/2007 season ranged between \$0.20 and \$0.37 each for quantities of 1000 or more.

Quantities of some seedling lots may be limited so it is prudent to inquire early to confirm that the nursery will have what you need. If they are unable to provide the species desired, they are able to recommend substitute species or other nurseries that may have suitable and/or excess stock for sale. The price list and other information about the nursery program are located on-line at http://www.fire.ca.gov/rsrc-mgt_statenurseries.php.

For information on the nursery or the many other services CAL FIRE has to offer, including forestry assistance, cost share, and land conservation programs, please contact your local CAL FIRE unit or go to <http://www.fire.ca.gov>.



Photo by Deputy Chief Steve Jones

Ed Medina prepares dry Jeffrey pine cones for seed extraction.

Resources

Forest carbon: getting started, keeping up

The forest carbon arena is changing fast. Keep up on current events through the California Climate Portal at <http://www.climatechange.ca.gov/>

The many aspects of forest carbon have generated tremendous interest, debate, and research. Where to start?

Current events

- A good way to keep up on current events is through the **California Climate Portal** (<http://www.climatechange.ca.gov/>).
- The **Governor's Climate Action Team** reports are available (http://www.climatechange.ca.gov/climate_action_team/reports/index.html).

CCAR

- **California Climate Action Registry (CCAR)** (<http://www.climateregistry.org/>). This site is filled with information, events, and more. You can become a member of the CCAR (<http://www.climateregistry.org/MEMBERS/Join/>).
- Learn more about the **Forest Protocols** (www.climateregistry.org/PROTOCOLS/FP/).

Other sources

- Other sources of information include:
- The forest carbon webpages of the **U.S. Environmental Protection Agency**, the **U.S. Forest Service**, the **US Department of Energy**, and the **UN Framework Convention**

on **Climate Change**.

- A helpful online primer, *Forest Carbon in the United States: Opportunities and Options for Private Lands* by Wayburn et al. (http://www.ucsusa.org/global_warming/solutions/recognizing-forests-role-in-climate-change.html)
- International guidelines for conducting national greenhouse gas inventories by the **International Panel on Climate Change (IPCC)** (<http://www.ipcc.ch/>). The portion on "Agriculture, Forestry and Other Land Uses" (AFOLU) lays out forest methods and accounting procedures.
- The **Pew Center on Global Climate Change** (<http://www.pewclimate.org/>)
- The **Center for Clean Air Policy** (<http://www.ccap.org/>) evaluates carbon gains from a broad range of alternative forest and agricultural policies in California with a useful bibliography.
- The **Pacific Forest Trust** (<http://www.pacificforest.org/>), the **Conservation Fund** (<http://www.conservationfund.org/>), the **Nature Conservancy** (<http://www.nature.org/>), and **Trust for Public Land** (<http://www.tpl.org/>) offer information on forests, carbon, and working forest conservation easements.

Technical Assistance

Many agencies are available to provide technical assistance, referrals, information, education, land management plan assistance, and advice.

California Stewardship Helpline
1-800-738-TREE; ncsaf@mcn.org

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USDA Forest Service
Jim Geiger
530-752-6834; jgeiger@fs.fed.us

Calendar

July 31–Aug 1

Southern CA Biomass Utilization Workshop

Location: San Bernardino

Sponsors: USDA Forest Service, UC Coop Extension, Forest Product Society, CAL FIRE

Cost: \$20

Contact: 909 382-2600

August 7–9, 2007

California Board of Forestry Meeting

Location: Sacramento

Contact: 916 653-8007

Website: http://www.bof.fire.ca.gov/board/board_current_docs.aspx

August 9

Oak Woodland Planner's Workshop

Location: Redding

Cost: \$25; \$30 after Aug 1

Contact: Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu

Website: <http://danr.ucop.edu/ihrmp/oakworkshop/index.html>

September 10–13, 2007

Fourth Annual Climate Change Research Conference

Location: Sacramento Convention Center, Sacramento, CA

Sponsors: California Energy Commission & Calif Environmental Protection Agency (CalEPA)

Website: http://www.climatechange.ca.gov/events/2007_conference/index.html

Notes: register by September 5

September 11 & 12, 2007

Carbon Markets USA Conference

Location: Hilton Hotel, San Francisco

Website: http://greenpowerconferences.icontact.com/asia/meet_the_us_carbon_experts2.html

September 11–13, 2007

California Board of Forestry Meeting

Location: Sacramento

Contact: 916 653-8007

Website: http://www.bof.fire.ca.gov/board/board_current_docs.aspx

September 19–20

Woody Biomass and Small Log Workshop: From Feedstock to Product

Location: College of the Siskiyous, Weed, CA

Contact: Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu

Website: <http://forestry.berkeley.edu/biomass/>

Notes: First day to be held at the COS Theater, and the second day is a field tour. Optional dinner on the 19th.

September 29, 2007

Forest Stewardship Workshop

Location: Mark West Creek Watershed

Cost: Small fee will be charged

Contact: Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu

Notes: limited to the first 30 registrants.

October 3–4

California Biodiversity Council Fall Meeting: Climate Change in California

Location: TBD

Contact: Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu

Website: <http://ceres.ca.gov/biodiversity/meetings.html>

October 9–11, 2007

California Board of Forestry Meeting

Location: Sacramento

Contact: 916 653-8007

Website: http://www.bof.fire.ca.gov/board/board_current_docs.aspx

October 11

Roads workshop

Location: Calaveras County

Contact: Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu

October 13, 2007

Forest Stewardship Workshop

Location: Occidental

Cost: Small fee will be charged

Contact: Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu

Notes: limited to the first 30 registrants.

Fall 2007 (in the planning stages)

Forest Stewardship Workshop

Location: Southern California

Contact: Sherry Cooper

Notes: Contact Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu to get on the mailing list.

Sierra Nevada Community Conservation and Wildfire Protection Plan (CWPP) Guidebook workshops

August 21–22, Butte County

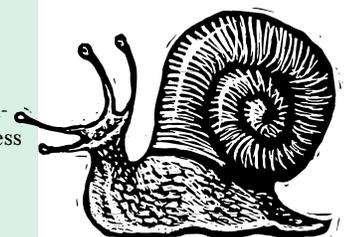
August 23, Sacramento

September 11–12, Sonora

The first day of the workshop is a half-day general introduction. The second day is an all-day hands-on workshop for those in the process of writing a CWPP. For more information go to <http://www.forevergreenforestry.com/SierraConservationCWPP.html>.

For more information on these calendar events call the number provided or the Forest Stewardship Helpline, 1-800-738-TREE.

To submit an event, contact Sherry Cooper, 530-224-4902; slcooper@nature.berkeley.edu.



Steve Hackett: Forest Steward of the Year

Jeff Calvert

I met Steve Hackett in 2001 when he applied to the Forest Legacy Program (FLP) for state funding to purchase a conservation easement for the family ranch near Ferndale in Humboldt Co.

Four generations of Hacketts have managed and lived on Howe Creek Ranch. It was Steve's intense desire and his family's wishes that the ranch be maintained and managed for its value in timber and cattle production.

(below) Steve Hackett discusses the history and management challenges of his 3800-acre ranch during a field trip to the Howe Creek Ranch.



Steve points out others who share credit for his accomplishments: (left) Jill Hackett, and (below) Maya Conrad, Northcoast Regional Land Trust boardmember; Jeff Calvert, Forest Legacy Coordinator; and Francis Carrington, Humboldt County landowner with a FLP conservation easement.



A conservation easement would allow the family to reduce the debt and tax value of the land and preserve the ranch. But conservation easements were not common among the ranching community. Most of his neighbors were very skeptical of this approach, which they viewed as a "sell-out" to the government.

In 2002, Howe Creek Ranch conservation easement closed with Pacific Forest Trust as the grantee. Recognizing the need for a local land trust, Steve and others created the Northcoast Regional Land Trust in 2003.

Through discussions with Steve, formerly skeptical friends and neighbors were convinced that the only way to save their ranches from development and provide for future generations was through a conservation easement. Steve helped formulate the Six Rivers to the Sea Forest Legacy Project to provide a blanket strategic plan for multiple landowners. Through this project, funding was leveraged to purchase conservation easements over numerous tracts.

The success of conservation of working forest properties in Humboldt County is largely due to the vision, dedication, and hard work of Steve Hackett. He has been an effective champion of working lands conservation. We are pleased to name him the 2007 Forest Steward of the Year.

To nominate someone for the Forest Steward of the Year Award, call 1-800-738-TREE.

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Send to CAL FIRE, Forestry Assistance, P.O. Box 944246, Sacramento, CA 94244-2460. Phone: (916) 653-8286; Fax: (916) 653-8957; email: jeff.calvert@fire.ca.gov